Our Case No.: 1391/1559

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Barkalow et al.	Examiner: Arthur L. Corbin
Serial No.: 10/617,905	Group Art Unit No.: 1761
Filing Date: July 11, 2003	
For: METHOD OF FORMING A SUGARLESS COATING ON CHEWING GUM	

APPEAL BRIEF (RESUBMISSION)

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an appeal from the Final Rejection dated June 19, 2006, of claims 1-19, all the rejected claims pending in the above captioned case. This Appeal Brief is a resubmission of the Appeal Brief mailed December 18, 2006, taking into account the Notification of Non-Compliant Appeal Brief mailed February 8, 2007.

I. REAL PARTY IN INTEREST

The present application is owned by the Wm. Wrigley Jr. Company.

II. RELATED APPEALS AND INTERFERENCES

There are no related Appeals or Interferences for this case.

III. STATUS OF CLAIMS

Claims 1-19 are pending. Claims 1-19 were all rejected, and are all being appealed. No claims have been allowed.

IV. STATUS OF AMENDMENTS

An amendment to claim 12 was filed with the original Appeal Brief. The Advisory Action mailed February 15, 2007 indicated that the amendment was entered and that the rejection under 35 U.S.C. § 112 had been overcome. The listing of claims in the Appendix includes claim 12 as amended by that amendment. The 35 U.S.C. § 112 rejection is not further addressed in this Appeal Brief.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention relates to chewing gum, and more particularly to a method of making chewing gum products with a sugarless coating. The application discloses methods of making improved sugarless coated chewing gum products and the products themselves.

Coated chewing gum products are well known. Many such products are made with a sugarless coating. For example, products that are designed to not promote tooth decay do not use fermentable sugars in the product, or in coatings on the product. Instead, sugarless sweeteners (polyols) such as sorbitol, maltitol, xylitol, erythritol, lactitol, hydrogenated isomaltulose and others are used in the product. One of the problems faced by chewing gum manufacturers is cost and availability of sugarless sweeteners. For example, maltitol, which gives a good coating, is fairly expensive, and sources of high purity powdered maltitol may be limited. Some sugarless sweeteners may be less expensive, but it is difficult to form high quality coatings with them. Specification, page1, lines 6-19.

While a hard, crunchy coating is desirable, it has proven difficult to make such coatings when using sugarless sweeteners. During typical sugarless coating operations, coating syrups made with maltitol, hydrogenated isomaltulose, sorbitol and lactitol are applied and dried with air to form a hard crunchy shell. As the coating dries, it has a tendency to become sticky and cause pellets to stick together or to the side of the coating pan. This would normally require additional air drying between syrup applications and extend the coating process time. To overcome this, less liquid syrup could be added per application, which would also extend the coating process time. Specification, page 2, lines 24-30.

The other option is the use of a dry charge or dusting material of the powdered polyol to absorb moisture and allow faster drying. In addition, to allow the powdered polyol to spread more evenly over the bed of gum centers, an anticaking agent is sometime added to the dry charge. However, the level of anticaking agent is usually kept low to reduce any taste problems due to use of this anticaking agent. Specification, page 3, lines 1-6.

A method of forming a sugarless coating on chewing gum has been discovered that makes use of a high quantity of less expensive filler material and yet still provides a quality coating. In the present invention, a significant amount of filler, such as calcium carbonate, is used as part of a dry charge or dusting material in a chewing gum coating. Specification, page 2, lines 23-25 and page 3, lines 7-9.

The coating operation involves applying a liquid coating syrup to the gum centers. After the coating syrup is allowed to spread, the dry charge is applied and allowed to spread over the liquid coated centers and absorb some of the moisture. Then drying air is applied to dry the pellets before the next syrup application. Generally, about 40-50 syrups applications are used to make coated chewing gums, and a dry charge is preferably used with the first 12 to 30 syrup applications. Later syrup applications, which are used to build up the coating and to smooth the surface of the pellet, preferably do not use a dry charge. Finally, the last 3-4 syrup applications are usually dried more slowly to give a smooth pellet coating for a quality chewing gum product. Specification, page 4, line 26 to page 5, line 3.

The level of filler used in the dry charge material is about 40% to about 80%, preferably 45% to 55%, and more preferably 50% of the dry charge material. Since a dry charge material is typically about 12% of the pellet coating, the coating will contain about 5% to about 10% filler, and preferably about 6-7% of the coating. The remaining dry charge material will be about 20% to about 60% bulk sweetener, such as maltitol, hydrogenated isomaltulose, sorbitol, or lactitol. The polyol used in the dry charge should be the same polyol used to make the syrup coatings that are used in the coating operation. Specification, page 3, lines 15-22.

Surprisingly a high-quality consumer-acceptable coating can still be made. It has been found that this higher level of use not only gives the advantage of lower cost by

replacing the polyol, but also gives some technological advantages. The resulting product has a crunchier coating, has increased corner strength, resulting in less corner chipping. In processing with this high level of filler, the coating time is also reduced, thus giving additional cost savings. Also, at this 5-10% level, the filler, which is preferably calcium carbonate, does not contribute any sensory defects. Additional test have also shown that the finished product has improved shelf life when stored under high humidity conditions. Specification, page 4, lines 15-25.

The use of a large quantity of filler in the dusting mix reduces the cost of the coating, yet the method of the present invention provides a way to use such a filler and still produce a quality gum coating. In preferred embodiments of the invention, more readily available forms of sugarless sweeteners are used, which is a further benefit to chewing gum manufacturers. Specification, page 2, lines 4-8.

Claims 1 and 19, the pending independent claims, are repeated below, along with references to the specification by page and line number for the information in the claims. This recitation of information is by example only, and does not limit the scope of the claims.

1. A method of forming a sugarless coating on chewing gum cores comprising (Specification, page 1, lines 26-27):

a) providing chewing gum cores (Specification, page 9, lines 10-13);

b) providing a coating syrup comprising one or more sugarless sweeteners (Specification, page 9, lines 19-23);

c) providing a dusting mix comprising about 20% to about 60% of a bulk sweetener selected from the group consisting of maltitol, hydrogenated isomaltulose, lactitol, sorbitol and mixtures thereof and about 40% to about 80% filler (Specification, page 3, lines 13-25);

d) applying a plurality of layers of the coating syrup and a plurality of layers of the dusting mix to the chewing gum cores to form a sugarless coating on the gum cores (Specification, page 4, line 26 to page 5, line 3).

19. A method of forming a sugarless coating on chewing gum cores comprising (Specification, page 1, lines 26-27):

a) providing chewing gum cores (Specification, page 9, lines 10-13);

b) providing a coating syrup comprising maltitol (Specification, page 13, last line);

c) providing a dusting mix comprising about 45% to about 55% maltitol and about 45% to about 55% calcium carbonate (Specification, page 3, lines 13-25);

d) applying a plurality of layers of the coating syrup and a plurality of layers of the dusting mix to the chewing gum cores to form a sugarless coating on the gum cores (Specification, page 4, line 26 to page 5, line 3).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1-19 were rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 4,317,838 (Cherukuri '838) or U.S. Patent No. 4,238,510 (Cherukuri '510).

VII. ARGUMENT

A. Claims 1-19 are patentable over U.S. Patent No. 4,317,838 (Cherukuri '838) and U.S. Patent No. 4,238,510 (Cherukuri '510).

i. Claims 1-19

In the Final Rejection, claims 1-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,317,838 (Cherukuri '838) or U.S. Patent No. 4,238,510 (Cherukuri '510). This rejection is improper and must be reversed. Claim 1 is directed to a method of forming a sugarless coating on chewing gum cores and requires, *inter alia*, providing a dusting mix comprising about 20% to about 60% of a bulk sweetener and about 40% to about 80% filler, and applying a plurality of layers of a coating syrup and a plurality of layers of the dusting mix to the chewing gum cores to form a sugarless coating on the gum cores. Claim 19 is similar, but more specific in requiring that the dusting mix comprises about 45% to about 55% maltitol and about 45% to about 55% calcium carbonate.

Both Cherukuri '838 and Cherukuri '510 have similar disclosures compared to one another in that they both teach methods of applying a sugarless coating to chewing gum, and both suggest the use of a dusting mix that is applied between different coating layers of syrup. The composition of the dusting mix in Cherukuri '838 can include 40-90% sweetener, 5-30% moisture absorbing component, 2-20% anti-sticking (or filler) component and 2-12% dispersing agent. See col. 3 line 51 to col. 4, line 4. Since calcium carbonate can be used for both the anti-sticking component and the dispersing agent, it could be argued that Cherukuri '838 suggests as much as 32% calcium carbonate in the dusting mix.

As can easily be seen, the present claims call for well more than the highest possible amount of calcium carbonate or other filler that would be used in Cherukuri '838, even if both the anti-sticking component and the dispersing agent were used at their extreme levels at the same time. In the Cherukuri '838 examples, the dusting mix never exceeded 15% combined of anti-sticking component and dispersing agent. See col. 6, line 44-49. Thus, a person or ordinary skill in the art reading Cherukuri '838 would not consider using over 32% of a filler in a dusting mix.

Cherukuri '510 is no more pertinent, and is even less relevant, than Cherukuri '838, because the maximum level of dispersing agent suggested by Cherukuri '510 is 5%.

The Final Rejection takes the position that even though Cherukuri '838 and '510 only teach using up to 20% filler in the dusting mix, it would only require routine experimentation by one reasonably skilled in the art to increase this level, and that increasing the level of filler would be expected to reduce the cost of the coating. This position is clearly based on impermissible hindsight of the present invention. If this position were true, then Cherukuri '838 would have indicated that more than 20% filler could be used in the dusting mix. Presumably the inventors in Cherukuri '838 would have been as motivated as anyone else to reduce the cost of the coating. The more plausible explanation, absent hindsight of the present invention, is that a person of ordinary skill in the art would, and Cherukuri et al. probably did, realize that one cannot add filler to items used in a coating for chewing gum without negatively impacting the properties of the coating, in both a taste perception (including texture) and appearance

perspective, as well as the difficulty of the panning operation. Cherukuri '838 and Cherukuri '510 therefore teach that the maximum level of filler in the dusting mix should not exceed about 20%.

The present inventors, however, made an unexpected discovery. Not only could they use a higher lever of filler in the dusting mix, but they were also able to improve some of the coating characteristics. As explained on page 4 of the present specification, it has been found that this higher level of use not only gives the advantage of lower cost by replacing the polyol, but also gives some technological advantages. The resulting product has a crunchier coating, and has increased corner strength, resulting in less corner chipping. Other aspects of a high quality coating include smoothness, uniform color, and retaining the shape of the underlying core. In processing with this high level of filler, the coating time is also reduced, thus giving additional cost savings. Also, at this level, the filler, which is preferably calcium carbonate, does not contribute any sensory defects. Additional tests have also shown that the finished product has improved shelf life when stored under high humidity conditions.

Pages 16-17 report the results of actual tests of the invention. Example 1 (using a dusting mix that contained 50% maltitol and 50% calcium carbonate) compared to Comparative Example A (where the dusting mix was 100% maltitol) was not only lower in cost due to replacing part of the maltitol with calcium carbonate, but also gave a faster coating time and improved the quality of the pellets with more corner strength and less chipping, and improved shelf life.

Example 2 (also using a dusting mix that contained 50% maltitol and 50% calcium carbonate) compared to Comparative Example B (where the dusting mix was 100% maltitol) was not only lower in cost due to replacing part of the maltitol with calcium carbonate, but improved product quality. The high maltitol content syrup used in Comparative Example B gave an improved corner strength compared to Comparative Example A and showed less chipping than Comparative Example A, but in so doing gave a less crunchy coating with a poorer shelf life. The added calcium carbonate in the dry charge of Example 2 gave a shorter coating time and increased the pellet crunch, while improving the corner quality and improving the shelf life.

The unexpected results outlined in the specification rebut any *prima facia* case of obviousness, even if one were made out by Cherukuri '838 or Cherukuri '510. No one reading these references would have thought that an improved coating could be made with filler levels in the dusting mix that were twice or more the maximum suggested in the references.

The Final Rejection argues that there is no factual evidence to support the arguments of unexpected results, because the comparisons of Examples 1 and 2 to comparative Examples A and B outlined above do not provide a comparison between the claimed invention and the prior art as applied. While it is true that no comparison has been made between products of the claimed invention and a hypothetical material of Cherukuri '838 containing 20% filler in a dusting mix, this does not mean that unexpected results have not been shown. The tests outlined above show that the products made by the present invention unexpectedly have better properties than products made with no filler in the dusting mix. For the reasons explained more fully below, a person of ordinary skill would expect the properties of a product made with no filler in the dusting mix to be better than a product made with some filler. Therefore the fact that products of the present invention were unexpectedly improved over products with no filler also shows that there is unexpected results compared to a hypothetical material having 20% filler in the dusting mix.

A person of ordinary skill in the coating of chewing gum pellets with a sugarless coating understands that the coating is dependent on the crystallization of the polyol from its dissolved state in the syrup to its hardened state on the gum pellet. If the polyol does not crystallize, the coating will not be hard and crunchy. A person of ordinary skill also understands that any impurity (non-polyol) in a coating makes crystallization of the polyol more difficult. However, a person of ordinary skill also appreciates that some level of impurity may be tolerated. In view of this understanding, the improvements of a crunchier coating, increased corner strength, smoothness, uniform color, retaining the shape of the underlying core, reduced coating time in processing and improved shelf life when stored under high humidity conditions are all unexpected advantages of the present invention, even in light of the teachings in the applied prior art.

The problem being addressed in Cherukuri '838 was that when sorbitol was used to form a coating on chewing gum pellets, the sorbitol did not recrystallize to form a thin crystalline coat, and the chewing gum centers stuck together in the coating operation, forming undesirable clumps. Col. 1, lines 31-39. While Cherukuri '838 is silent on the benefits of using a dusting mix, presumably the use of the dusting mix helped solve these problems. While the ingredients in the dusting mix are outlined, there is no discussion as to the reason for using the ingredients, other than the titles given to the ingredients in the following statement: "The dusting mix comprises a dry powder mixture containing (a) sweetener (or bulking agent) similar to (and preferably the same as) that employed in the coating syrup, (b) moisture absorbing component, (c) anti-sticking (or filler) component, and (d) dispersing agent." Col. 3, lines 51-55. Other than the labels "anti-sticking (or filler)" and "dispersing agent", there is no indication in Cherukuri '838 as to why these ingredients are included in the dusting mix. (They are also included in the coating syrup, again without any further explanation.) Interestingly, the dispersing agent can be the same as the anti-sticking compound, but no explanation is given as to why. Col. 3, lines 34-38. The resulting products are said to have a soft chew with good sweetness and flavor release properties. Col. 7, lines 20-24. There is no indication in Cherukuri '838 as to the properties of the coating, and significantly, there is no explanation as to how the use of the anti-sticking and dispersing agents affect the coating properties. (Cherukuri '510 has an almost identical disclosure as far as the forgoing points are concerned.)

Since there is no explanation as to why the anti-sticking (or filler) and dispersing agents are used, one must assume from their titles that the anti-sticking component helps to prevent the gum centers from sticking together during the coating operation. No function is specified for the dispersing agent, nor is one clear from the name "dispersing agent". Since the dispersing agent can be the same as the anti-sticking agent, it may have some benefit in helping to keep the gum centers from sticking together. With these benefits in mind, and the generally understanding of how crystallization is important in the coating operation, it is clear that a person of ordinary skill in the art would only include these components in the dusting mix up to the point where they achieved the desired result. Once the level of anti-sticking component was

sufficient to keep the gum centers from sticking together in the coating operation, there is no further benefit to adding more anti-sticking component. Instead, any further anti-sticking component that is added will have to be tolerated as an impurity in the coating, and the sorbitol will have to crystallize around it. Thus, a person of ordinary skill in the art would not want to increase the level of the anti-sticking component in the dusting mix above the 20% level specified in Cherukuri '838. Optimization of the anti-sticking and dispersing agent levels in the dusting mix would be the minimum levels needed to prevent the gum centers from sticking together. This realization contradicts the logic in the Final Rejection that the levels would be increased as a cost saving measure. This is also born out in the examples in Cherukuri '838. The dusting mix in Examples 1, 2 and 3 used 7.5%, 10% and 5% calcium carbonate as the anti-sticking component, respectively, and 7.5%, 5% and 10% titanium dioxide as the dispersing agent, respectively. Thus the total of these two ingredients never exceeded 15% of the dusting mix. Also, titanium dioxide is more expensive than calcium carbonate. Thus, if cost were being optimized, titanium dioxide would not have been used at all, and the levels of calcium carbonate would have been 20%. Also, since no indication was given in Cherukuri '838, we have no idea how these levels affected the coating characteristics.

The Examiner's argument in the Final Rejection that optimization of the calcium carbonate would have increased the level above 20% fails to look at the reason why the calcium carbonate was being used in Cherukuri '838, and consider the negative impact that a person of ordinary skill would understand that it would have on the coating properties. This shows that the basis of the rejection is completely based on impermissible hindsight.

Further, the surprising results that were discovered by the present inventors and outlined in the specification are no less surprising in view of Cherukuri '838. There is nothing in Cherukuri '838 that would suggest that adding an anti-sticking agent to the dusting mix would do anything to give a crunchier coating, increased corner strength, smoothness, uniform color, retaining the shape of the underlying core, reduced coating time in processing and improved shelf life when stored under high humidity conditions. The fact that the inventive products have not been tested compared to the Cherukuri products does not make these results any less surprising. In fact, as explained above,

a person of ordinary skill in the art would think that the best coating properties would result from the least amount of non-polyol in the coating. Nothing in Cherukuri '838 teaches to the contrary, since Cherukuri is silent on the properties of the resulting coating, and only suggests that these materials are added to prevent the gum centers from sticking together in the coating operation.

Thus claims 1 and 19, and claims dependent thereon, are patentable over Cherukuri '838 and Cherukuri '510.

ii. Claims 3, 4 and 19

Claims 3, 4 and 19 are further patentable for additional reasons. These claims require even higher levels of filler (about 45% to about 55%, and about 50%) than 40% in the dusting mix. The logic discussed above is even more persuasive in showing that it would not have been obvious to increase the level of anti-sticking agent in Cherukuri '838 and Cherukuri '510 to these levels. Thus claims 3, 4 and 19 are further patentable over the cited references.

iii. Claim 18

Claim 18 specifies that the method results in pellets with a coating having sufficient strength to prevent the corners from chipping during normal manufacturing and distribution of the coated pellets. Again, one of ordinary skill in the art reading Cherukuri '838 and Cherukuri '510 would not think that by increasing the level of anti-sticking agent in the dusting mix to about 40% to about 80% would be able to increase the coating strength to prevent corner chipping. Claim 18 is thus further patentable over the cited references.

iv. Claim 14

Claim 14 requires the use of a high maltitol content syrup in the coating syrup, which means that over 80% of the solids are maltitol. It was found that the use of a high level of filler in the dry change also made it possible to use a high maltitol content syrup in the coating syrup, such as in Example 2. This material is lower in cost and more readily available than high purity maltitol powder. As noted on page 17, lines 1-3, the use of a high maltitol content syrup gives improved corner strength of pellets during processing, but gives a product with a shorter shelf life. However, utilizing the present

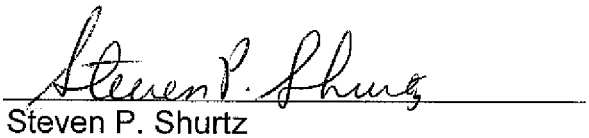
invention, it is believed that a product that will have good corner strength for processing, while still giving a product with good product shelf life, can be produced. There is no suggestion in Cherukuri '838 or Cherukuri '510 of using a high maltitol content syrup. The Final Rejection suggests that finding the optimum amount of maltitol in the syrup requires nothing more than routine experimentation. However, the prior art does not even suggest using a maltitol syrup to make the coating syrup, let alone a maltitol syrup with a high maltitol content. Further, there is nothing in the cited art that suggests that the changing the maltitol content will have any impact on the coating operation, so there is no reason for anyone to "optimize" a maltitol content. This position in the Final Rejection is thus clearly based on impermissible hindsight. For these reasons, claim 14 is further patentable over the cited references.

VIII. CONCLUSION

Appellants have made a novel and nonobvious contribution to the art of forming sugarless coatings on chewing gum cores. The claims at issue distinguish over the cited references. The present invention is not obvious in view the cited prior art. The references are being modified based solely on hindsight reconstruction of the invention. A person of ordinary skill in the art would not modify the references as suggested in the Final Rejection.

Appellants submit that the present invention is fully patentable over the cited references and the Examiner should be REVERSED.

Respectfully submitted,



Steven P. Shurtz
Registration No. 31,424
Attorney for Appellants

Dated: March 8, 2007

BRINKS HOFER GILSON & LIONE
P.O. Box 10395
Chicago, IL 60610
(312) 321-4200
Direct Dial: (801) 355-7900

CLAIMS APPENDIX

CLAIMS ON APPEAL

1. A method of forming a sugarless coating on chewing gum cores comprising:

a) providing chewing gum cores;

b) providing a coating syrup comprising one or more sugarless sweeteners;

c) providing a dusting mix comprising about 20% to about 60% of a bulk sweetener selected from the group consisting of maltitol, hydrogenated isomaltulose, lactitol, sorbitol and mixtures thereof and about 40% to about 80% filler;

d) applying a plurality of layers of the coating syrup and a plurality of layers of the dusting mix to the chewing gum cores to form a sugarless coating on the gum cores.

2. The method of claim 1 wherein the coating syrup and dusting mix are applied alternatingly for at least 12 coating operations.

3. The method of claim 1 wherein the filler comprises between about 45% and about 55% of the dusting mix.

4. The method of claim 1 wherein the dusting mix comprises about 50% filler and about 50% maltitol.

5. The method of claim 1 wherein the coating comprises between about 5% and about 10% filler.

6. The method of claim 1 wherein the coating comprises about 6% to about 7% filler.

7. The method of claim 1 wherein the syrup comprises between about 30% and about 80% of a sugarless sweetener selected from the group consisting of maltitol, sorbitol, hydrogenated isomaltulose and lactitol.

8. The method of claim 1 wherein the syrup further comprises between about 1% and about 12% of a gum selected from the group consisting of gum arabic, gum talha and mixtures thereof.

9. The method of claim 1 wherein the filler is selected from the group consisting of calcium carbonate, magnesium carbonate, talc, ground limestone, magnesium silicates, aluminum silicates, titanium dioxide, mono-, di-, and tricalcium phosphates, cellulose polymers and combinations thereof.

10. The method of claim 1 wherein the filler comprises calcium carbonate.

11. The method of claim 1 further comprising the steps of providing flavor and applying the flavor so as to be incorporated into the coating on the gum cores.

12. The method of claim 11 wherein the flavor is added between applications of the coating syrup; and no dusting mix is applied immediately before and immediately after the flavor is applied.

13. The method of claim 1 wherein first and second different coating syrups are provided and the different coating syrups are used at different times in the coating operation.

14. The method of claim 1 wherein the coating syrup comprises a high maltitol content syrup wherein over 80% of the solids in the syrup are maltitol.

15. The method of claim 1 wherein the coating further comprises a high-intensity sweetener.

16. The method of claim 1 wherein the coating syrup comprises a high-intensity sweetener.

17. The method of claim 1 wherein the coating comprises a hard shell coating.

18. The method of claim 1 wherein the chewing gum cores have a pellet shape with corners and the coating has a strength sufficient to prevent the corners from chipping during normal manufacturing and distribution of the coated pellets.

19. A method of forming a sugarless coating on chewing gum cores comprising:

a) providing chewing gum cores;

b) providing a coating syrup comprising maltitol;

c) providing a dusting mix comprising about 45% to about 55% maltitol and about 45% to about 55% calcium carbonate;

d) applying a plurality of layers of the coating syrup and a plurality of layers of the dusting mix to the chewing gum cores to form a sugarless coating on the gum cores.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None